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REPORT ON A NATIONAL TRIAL INSPECTION IN THE CIVIL CHEMICAL INDUSTRY

INTRODUCTION

The Spanish Government has repeatedly emphasized its resolve to give firm support to a convention banning chemical weapons which will be effective and consequently verifiable.

In that context, and with the aim of bringing its own experience to bear on the negotiations and the objectives of the convention, Spain carried out an inspection of a plant producing a range of products, in which a schedule 3 chemical is produced by industrial chemical processes.

The inspection procedures applied were those stipulated in the text of the draft convention for schedule 2 chemicals.

The data obtained from the national trial inspection are presented in accordance with the now standard model set out in document CD/CW/WP.213.

A. GENERAL APPROACH

1. Objectives of the national trial inspection

The national trial inspection had the following objectives:

To assess the difficulties arising in practical application of the procedures laid down for verification of chemical industry producing schedule 2 chemicals;

To assess the relations between inspection of the chemical and industrial aspects of the plant and inspection of the accounts (auditing), using documents supplied by the management.

The trial inspection also had the following indirect objectives:

To provide direct information and experience to one of the seven major chemical plants in Spain, which, like all the others, will be affected by the provisions of the chemical weapons convention;

To provide direct information and experience to agencies in the Spanish administration which in the future will also be involved in tasks related to the application of the chemical weapons convention, both from the viewpoint of internal policy (new laws and regulations) and from the viewpoint of relations with the bodies to be set up under the convention (national authority, experts working for the organization, and so on).

The experience acquired proved particularly useful for a country like Spain, which has a large chemical industry with a medium-to-high level of technological development and a substantial export capacity.

2. Provisions in the draft convention under which the trial inspection took place

The inspection was conducted in accordance with the rules laid down for verification and monitoring of schedule 2 chemicals appearing in annex 2 of article VI. Despite the fact that the inspected plant does not produce schedule 2 chemicals, it was selected because its major features are very similar to those which would have to be declared under annex 2 of article VI.

3. Type of on-site inspection

The national trial inspection involved an initial, general inspection of the plant for familiarization purposes, followed by a routine on-site inspection.

4. Advance information

(a) Declarations

The plant management provided the inspectors with a detailed declaration in accordance with the format set out in annex 2 of article VI.

(b) Agreement on inspection procedures

The inspection programme was drawn up at a meeting held by the inspectors with representatives of the company one week before the inspection took place.

5. Type of facility inspected

The inspected plant corresponded to a declared multipurpose facility whose principal product is basic monomers for plastics production.

6. Type of declared activity at the facility

The plant produces no chemicals listed in schedule 2 of the draft convention text. However, it does produce a chemical on schedule 3, which, for the purposes of the inspection, was considered to be one of those included in schedule 2.

The plant consists of three clearly separate parts:

In the first, two conventional feedstocks A and B react over a catalyst in a fluidized bed to produce chemical C, the principal product of the reaction, and as a by-product chemical D, which was the principal subject of the inspection.

As is normal with organic chemistry reactions, a number of waste products are also produced which are not commercially usable and which are subsequently sent with others for destruction by incineration in a purpose-built unit within the plant itself.

The reaction liquid is subject to a process of separation by distillation as a result of which chemical C, following purification, is ready for sale.

Chemical D is used primarily to produce a further chemical E, an intermediate product normally traded in the chemical industry.

Another portion of chemical D, which was the subject of the inspection, is made into an aqueous solution which is transported by rail to an organic chemical plant elsewhere in Spain.

This is the real crux of the inspection, since at this point chemical D has not been processed by the producer. However, the inspection team noted that for security and environmental reasons, the competent authorities at the time had not authorized the installation of intermediate tanks, so that there is no more chemical in the plant than that found in the container in which the solution is prepared, and that, once it is full, this container is pumped out into a tank wagon for transport to its destination.

Subsequent visual inspection confirmed that the facility contains no equipment for the compression, liquefaction, packaging or transport of this chemical in another form.

7. Actual activity at the facility

B. DETAILED APPROACH

1. The inspection agreement

The management of the company and the inspection team negotiated a very broad inspection agreement under which there were no restrictions on access to any part of the plant. The agreement was drawn up on the basis of the document set out in CD/1033.

2. The inspection team was made up of the following:

Team leader: A chemical industry manager with extensive experience in industrial processes;

A chemical plant manager who is an expert in processes, with special reference to security and environmental factors;

A weapons specialist representing the Ministry of Defence;

A chemical warfare specialist representing the Ministry of Defence;

An expert in commercial and balance-sheet auditing;

Two representatives of the Ministry of Foreign Affairs, performing functions which will in future be allocated to the national authority.

The inspectors were accompanied by a representative of the company that owns the facility visited.

3. Inspection equipment

During the inspection, in compliance with applicable regulations, use was made of protective security equipment supplied by the company itself. Equipment for sample-taking and analysis was also supplied by the company and used on the spot.

4. Activities prior to the arrival of the inspection team

The plant management was given one week's notice of the exact date of the inspection.

5. Advance preparation on-site

The only preparations carried out on-site were those immediately connected with the work of the inspection team. Consequently, the plant made no changes in its normal procedures in advance of the inspectors' visit.

6. Preparations relating to escort and points of contact

The inspectors were accompanied by staff of the company which owned the facility, starting from a point of contact decided upon by the company itself.

7. Other participants

There were no other participants.

8. Duration of inspection

The inspection took three days in all. On the first day the first contact was made with plant representatives and the confidentiality agreement was signed. On the second day the inspection team split into two groups; the scientific/chemical group began the detailed inspection of the plant after receiving precise information from the technical department.

The accounting expert visited the accounting department and began his study of the documentation supplied by the company.

The inspection team devoted the third day to drafting its report on the basis of the information obtained by the two groups of inspectors in their fields of competence.

9. Measures to protect confidential information

Prior to any activities related to the inspection, the plant management required all the members of the team to sign a confidentiality agreement in which they undertook not to use the information obtained as a result of the exercise for purposes unrelated to the inspection.

This undertaking is binding unless waived by the company itself.

10. Opening conference

During the opening conference, company representatives elaborated in detail on the preliminary information provided one week before and explained the safety regulations that would have to be complied with in the course of the inspection.

The company's Processes Department presented production data for the previous two years, the flow chart and the manufacturing process for the product under investigation.

11. Types of records needed and/or audited

One member of the inspection team devoted himself to the authoritative verification, on the basis of the commercial documentation on inputs and outputs, of the data and flow charts supplied. It should be noted that this company's operations are audited by firms of recognized international competence.

The firm's balance sheets at the beginning and end of the past few years were examined with respect to stocks of those products used in the production processes of the units examined.

By means of the relevant company documents, production for these years was studied and checked, together with other inputs from units other than those involved in the process in question.

The records of intermediate products dispatched to other units, internal consumption and commercial sales were then examined.

On completion, these balances for the whole production process were compared with the figures obtained by applying efficiency factors to each unit in the light of the relevant levels of use; it was found that the recorded and calculated product balances matched perfectly.

After these products had been matched, the team used random sampling methods to analyse invoices and records of purchases of raw materials, transfers of intermediate products and sales of commercial products.

Lastly, the team checked all the supporting documents relating to sales of the product with which the inspection was directly and specifically concerned, and found that they were in complete conformity with the sales data provided by the company in its product balance.

Full monitoring of product D could, if necessary, be achieved by comparing shipping documentation with the acceptance documentation of the receiving company, and comparing both sets of documentation with that of the Spanish National Railways, since products of this type are carried exclusively by rail.

12. Plant orientation tour

After the analysis of the plant's characteristics and flows, and of all the information made available by the management after the opening conference, the team made a visual inspection of the plant which from the outset confirmed the data it had already received.

13. Inspection of areas and facility equipment

The following areas and facility equipment were inspected in detail:

Reaction area;

Repairs area;

Purification area;

Distillation area;

Storage area;

Laboratories, sample-taking processes and analytical equipment.

14. Inspection of operation procedures

In the course of the inspection, special attention was paid to those procedures used in the production of the chemical under inspection in which diversion to the manufacture of schedule 1 substances might occur.

15. Sampling and sample-taking procedures

Sampling at the various stages of the production process and sampling from waste were undertaken by company personnel using company equipment whenever and wherever the inspectors so requested.

16. Handling of samples

The samples were always taken under the direct supervision of the inspectors, and the sample containers were identified by the inspectors, in order to safeguard subsequent handling.

17. Analysis of samples

The samples obtained throughout the production process under the supervision of the inspectors were immediately analysed in the plant laboratory, again under direct supervision by the inspectors. The laboratory log-books recording the systematic analyses of the aqueous solution of substance D were also examined and were found to conform to the analyses made by the company's clients who had received the substance.

18. Types of analyses

The analyses were carried out in conformity with ASTM standards.

19. Documentation of the inspection

The inspectors kept records of the samples taken throughout the production process and of the results of the analyses carried out immediately afterwards in the plant's own laboratory.

It was not considered necessary to remove any documentation from the plant.

20. Evaluation by inspectors

The evaluation undertaken by the inspectors took into account:

The complete documentation provided by the company as regards technical accounting data;

The possibilities of detecting anomalies in the course of the production process;

Consistency between inspection of the production plant and the accounting data supplied;

The firm's willingness to cooperate with the inspectors.

21. Closing conference

No conference was necessary on completion of the inspection team's activities.

22. Anomalies, disputes and complications

None.

23. Report of the inspection team

The report on the inspection was prepared in the course of a meeting held immediately after the inspection and was drafted by one of the team members during the days following that meeting. It comprises the following sections:

Preparations for the inspection: prior contacts and conversations;

Analysis of the confidentiality agreement;

List of inspection activities undertaken at the plant;

Analysis of accounting and commercial documents provided by the company;

Results and verification of analyses and analytical systems;

General evaluation and conclusions by the inspectors.

24. Impact of the inspection on facility operations

The chemical industrial and accounting aspects of the trial inspection caused no disruption of the plant's production process.

Nevertheless, the inspection did directly entail expenditure for the company in the form of loss of working hours by staff and travel by some of its executive staff both during the preparatory period and during the inspection itself.

C. CONCLUSIONS

1. The inspection mandate

The inspection mandate was sufficiently broad to enable the inspection team to do its work effectively. The work was effective in that it enabled reasonable certainty to be achieved concerning the plant's activities. The company denied the team access only to the computerized data bank in which the plant's production processes are stored. Apart from this type of information, which lies at the heart of the company's legitimate right to confidentiality concerning its technological and commercial research, the inspectors had free access to all departments.

2. Composition of the inspection team

Inspection of a multi-purpose plant of the kind with which we are concerned requires a large inspection team, as experience has shown. The inspection team must comprise experts in chemical engineering, chemical analysis and commercial and balance-sheet auditing. This obviously entails costs which will probably in some way devolve upon the chemical industry

inspection systems that are eventually adopted under the chemical weapons convention. Moreover, and in contrast to the experience of other countries, after trial inspections such as this it does not seem that a smaller plant can be inspected by a smaller team of inspectors. Because of the complexity of current industrial processes, for the purposes of in-depth analysis a high and specialized degree of technical expertise is required, whether the plant be large or small.

It was also found that the work of the accountants as team members was fundamental. As in the case of other countries, the Spanish experience has shown that the modern industrial chemical process generates a large quantity of records, the analysis of which is of great benefit to the inspectors in their work. Moreover, in the majority of cases, this analysis does not involve serious interference in the company's privacy (raw material inputs, movements of substances within the plant, etc.).

3. Analysis and taking of samples

The systems used for the taking of samples and immediate analysis of the samples obtained whenever and wherever the inspectors so requested enabled them to ascertain to their full satisfaction the legitimacy of the plant's activities. It is, however, more than likely that on many occasions, for purely technical reasons, it will be necessary to take more samples and to subject them to comparative analysis within and outside the plant, using procedures that are much more stringent and are clearly separate from the channels, procedures, facilities and even personnel of the plant.

4. Duration of the inspection

In the opinion of the team of inspectors, the time taken up by the inspection (three days on-site, plus a preliminary meeting one week before) represents a realistic estimate of the possible duration of an actual inspection in the future.

5. Measures to protect confidential information

From the outset of its contacts with the inspection team, the company expressed its concern about confidentiality. Consequently, all members of the team were required to sign a document in which they undertook not to divulge any of the data obtained in connection with their activities. It was not considered feasible to draw a distinction between confidential and non-confidential data.

6. General assessment

The inspectors realized the importance of good cooperation on the part of the company, both in the preparation and in the conduct of the inspection. They also concluded that no firm whose activities are legitimate would be likely to have a serious objection to supplying the inspectors with exhaustive documentation on technical data relating to the facility, production charts, efficiency levels and analytical methods.

The inspection team also realized the enormous importance of visual inspection - both prior overall inspection and subsequent detailed inspection. Through careful visual inspection unrestricted by the company, an expert can already obtain important information.

Lastly, it was found that commercial auditing, especially in those companies in which the documentation used conforms to examinations by internationally recognized external auditing firms, is vital and ensures reliable checking of figures and activities. The use of this instrument for this type of verification is accordingly considered highly advisable.